Avery Weigh-Tronix

WI-125 for Lift Trucks
User's Manual

UNITED STATES

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

CANADA

This digital apparatus does not exceed the Class A limits for radio noise emissions from digital apparatus set out in the Radio Interference Regulations of the Canadian Department of Communications.

Le present appareil numerique n'emet pas de bruits radioelectriques depassant les limites applicables aux appareils numeriques de la Class A prescrites dans le Reglement sur le brouillage radioelectrique que edicte par le ministere des Communications du Canada.

CAUTION

Risk of electrical shock. Do not remove cover. No user service-able parts inside. Refer servicing to qualified service personnel.

Weigh-Tronix reserves the right to change specifications at any time.

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WI-125 Specifications

Dimensions:	9.37" W x 6.75" H x 3.75" D (23.8 cm x 17.1 cm x 9.5 cm)
Power:	10 to 90 VCD, 300 mA maximum
Display:	8 digits, 7-segment LCD, 0.6 inch high with annunciators and backlighting.
Display Rate:	One, two or five times per second
Agencies:	NIST Handbook 44, Class III, IIIL, 5,000 divisions COC #92-167.A3 FCC Class A
Accuracy :	Class III, IIIL; 5,000 divisions Span: ±5.0 ppm/C Zero: ±.066 uV/C (-10 to 40°C) Span: ±10 ppm/C Zero: ±0.13 uV/C (-30 to 60°C)
Linearity:	±0.005% of capacity, maximum
Repeatability:	±0.005% of capacity, maximum
Hysteresis:	0.005% of capacity, maximum
Weigh bar drive capacity:	Up to four 350 ohm weigh bars.
Environment:	-10 to 40°C (14 to 104°F) for HB-44 specs 10 to 90% relative humidity
Internal Resolution:	0.5 mV/V = 400,125 counts
A to D conversion rate:	30 times per second
Analog Range:	-0.14 to +3.5 mV/V
Capacity:	.00001 to 999999, programmable to any number between these limits.
Divisions:	.0001 to 20000, programmable to any division size between these limits.
Push Button Zero Range:	0 to ±100% of capacity; programmable independent positive and negative limits; unit will not allow zeroing beyond capacity.
Tare:	The unit may be configured to have pushbutton tare which can function as a scroll tare register. Pushbutton tare and scroll tare may tare only positive gross weights up to the capacity of the unit. Scroll tare allows numeric entry of a tare value using two keys to enter the value.
Motion Detection Window:	Programmable from 0 to 999999 divisions, decimal entries are accepted.
Automatic Zero Tracking:	Window: Programmable from 0 to 999999 divisions, decimal entries are accepted. Net Mode Tracking: May be enabled or disabled. Rate: 0.2 division per second Starting Delay: 2 seconds
Linearity:	Second order correction provides smooth curve fit through three points--zero, linearity, span.
Angle Compensation:	Compensates for pitch and/or roll out-of-level weighing.
VIBRATION COMPENSATION	
Analog Low Pass Filter:	Two section with .10 second time constant for low power analog and .06 second time constant for standard analog.
Software Low Pass Filter:	One section with .05 second time constant.

Introduction

The WI-125 is a weight indicator which may be used with Lift Truck Systems. The indicator is powered by a DC power source of 10 to 90 volts.

This set of instructions is divided into the following sections:

- Introduction
- Operations Mode
- Keyboard
- Indicator Operation
- Operations Menu
- Transmitting Data
- Indicator Diagnostics

Operations Mode

Operations mode contains all normal weighing operations. In this mode you can view or set the following parameters if the unit is so configured:

- pushbutton tare
- time
- date
- backlight

Time, date and backlight can be secured behind a security code. Parameters secured by the code number can be viewed but not changed unless you enter the security code.

Keyboard

The keyboard consists of 7 keys. Five keys, or buttons, provide all the basic weighing functions:

- Tare
- Gross/Net
- Zero
- Print
- Units

The other keys are used to access the menus for purposes of accessing information, testing the indicator, and configuration. The keyboard is shown in Figure 1.

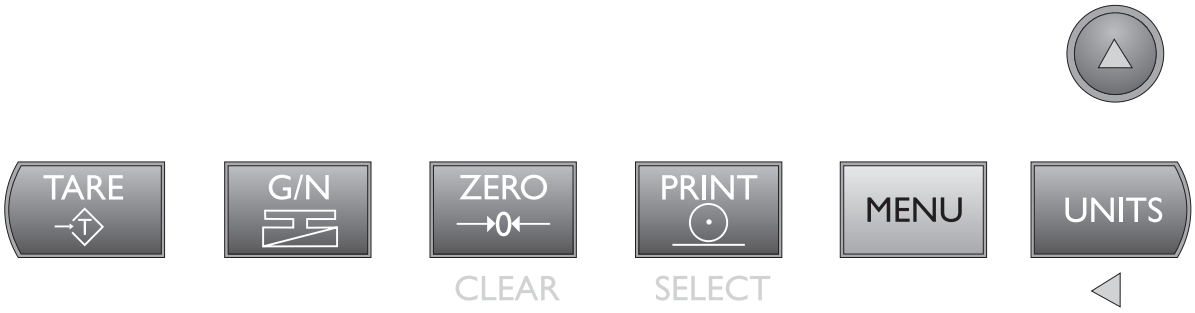


Figure 1
WI-125 Keyboard

Key Functions

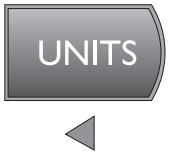
Enters a pushbutton tare in gross/net operation. This key's factory default is OFF and it must be enabled for use.

Accesses the gross weighing mode from any other function and activates the net weighing mode if a tare is active.

Zeros the scale in gross or net weigh mode. This button also clears scrolled digits on the display before they are accepted.

Sends a print command and is used to select menu items.

Used to access menus and move among choices in a menu.



Changes the unit of measure during operations mode and moves a digit inserted with the ↑ key one space to the left. The factory default for this key is set for lbs only.

Lets you scroll numerical values.

Entering Numbers with Arrow Keys

*If at any time you enter an incorrect number, press **CLEAR** to delete the number, then re-key.*

The arrow keys are used to enter numbers. Refer to this section when you need to enter a number or numbers.

Example: To key in the number 603

Press the ↑ key repeatedly until the 6 appears on the display.

Press the ← key once to move the 6 one space to the left.

Press the ↑ key until the 0 appears.

Press the ← key once to move the 60 one space to the left.

Press the ↑ key until 3 appears.

The decimal appears after the 9 as you scroll through the numbers with the ↑ key. After the decimal appears, press the ← key once, then enter the next digit of your number.

Indicator Operation

Powering Up

No annunciators are lit while motion is detected.

The unit will power up in gross or net weighing mode, depending on what mode the unit was in when last turned off.

The indicator display (see Figure 2) tells you the status of the indicator through the illumination of annunciators. The annunciators are small black arrows pointing to the different labels around the display face.

Figure 2
Indicator Display

Annunciators

Gross - Illuminates when indicator is in gross weighing mode.

Net - Illuminates when a tare is in effect and the indicator is in net weighing mode.

CZero - Illuminates when the scale is within ±1/4 division of zero.

Print - Illuminates when the print key is pressed and data is transmitted.

lb, kg - Illuminates the active unit of measure in weighing mode.

Operations Menu

Your unit is configured to display some or all of the following functions: pushbutton tare, ID, time, date, accumulator, count, and backlight. These can be viewed and changed if allowed by the security code. **This manual assumes the unit is configured to allow full access to all functions**. You can disable unneeded options. Instructions are in the *Service Manual*. Below is a flowchart and general instructions for moving around the operations mode menu.

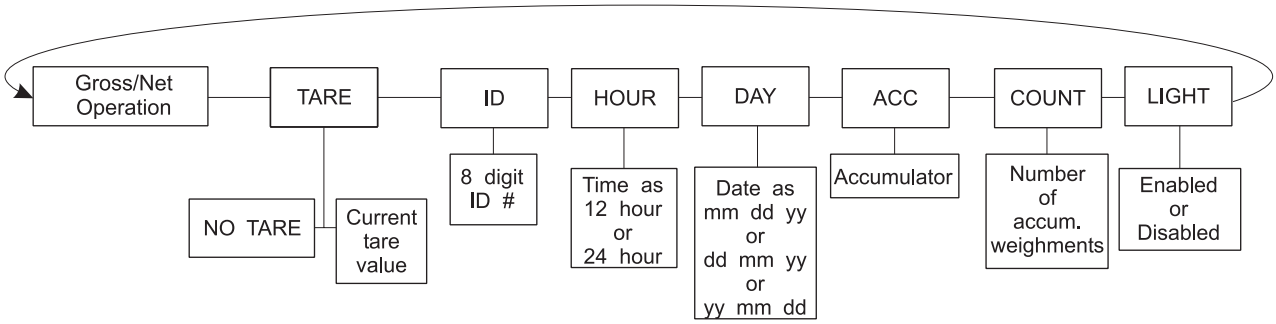


Figure 3
Operations Menu Diagram

Press **MENU** to go right in the diagram.

Press and hold **MENU** to go left in the diagram.

Press **SELECT** to select new choice and to go up and down in the diagram.

Press **G/N** at any time to save changes and return to gross/net weighing mode.

Gross/Tare/Net Weighing Operations

Gross Weighing

To perform gross/net weighing operations, follow these steps:

1. Power up the indicator.	Indicator powers up in gross or net mode.
2. If the unit is not in gross mode, press the **G/N** key once to get to gross mode.	The annunciator illuminates next to gross. See Figure 2
3. Make sure the forks of the lift truck are off the ground and empty, then press the **ZERO** key.	No weight is displayed and the zero annunciator illuminates. See Figure 2.
4. Select unit of measure by pressing the **UNITS** button.	The units annunciator will point to the chosen unit of measure.
5. Place weight on the scale.	Gross weight is displayed.

Net Weighing

For net weighing operations a tare needs to be entered. A tare can be entered by two methods: pushbutton tare or entering a numerical value while in the operations menu.

Factory default configuration is Tare off.

Pushbutton Tare

1. With the indicator powered up in gross mode, make sure the forks of the lift truck are off the ground and empty, then press the **ZERO** key.	No weight is displayed and the zero annunciator illuminates.
2. Place the weight to be tared on the scale.	The weight of the object is displayed.
3. Press the **TARE** key on the indicator.	The weight is tared, the display reads zero and the net annunciator illuminates.
4. Add more weight to the scale.	Net weight is displayed.
5. View the gross weight by pressing the **G/N** button.	Gross weight is displayed and the gross annunciator illuminates.
6. Press the **G/N** key again to see net weight.	Net weight is displayed and the net annunciator illuminates.

*You may view the current or active tare value at any time during a weighing process. From gross or net weighing mode, press **MENU** then **SELECT**. If a tare value is in use, it will be displayed. Press **G/N** to return to gross/net weighing mode. Refer to the Operations Menu and Figure 3 for more details.*

Entering a Scroll Tare

1. From gross/net weighing mode, press the **MENU** key.	tArE is displayed.
2. Briefly press the **SELECT** key.	*no tArE* or the current tare value is displayed. You can toggle between *no tArE* and the current tare value by pressing the **MENU** key.
3. With the current tare value displayed, enter a numerical value for your tare. Refer to the section *Entering Numbers with Arrow Keys.* Then, press the **SELECT** key.	New tare value is displayed, then *tArE* is displayed.
4. Press **G/N** to return to gross/net weighing mode.	Display returns to gross or net mode.

Clearing the Active Tare

There are two ways to remove the current or active tare weight.

1. Remove all weight from the scale and press **TARE**.	Tare register is cleared, scale returns to gross mode and no weight is displayed.
2A. With the gross or net annunciator illuminated, press **MENU**, then press **CLEAR**.	*tArE* is displayed, then *no tArE* is displayed.
2B. Press the **G/N** key.	Gross weight is displayed and no tare is active.

Net Weighing Operation

1. After a tare is established, place the indicator in net mode by pressing the **G/N** key.	Net annunciator illuminates. Zero weight will be displayed with the container on the scale.
2. Place material to be weighed in the tared container on the scale.	Net weight of material is displayed.

ID Number Entry

Reference the Operations Menu section for menu details.

Factory default configuration is ID off.

You may enter an ID number of up to 8 digits in length. The ID number may include any combination of the numbers 0 through 9, a dash and a decimal point.

1. From gross weighing mode, press **MENU** repeatedly. . .	***id.*** is displayed.
2. Press **SELECT** . . .	The current ID number is displayed.
3. With the current ID number displayed, enter a numerical value for your ID number using the keypad.	The new ID number is displayed.
4. After your new ID number has been displayed, press **SELECT**. . .	***id.*** is displayed.
5. Press **G/N** to return to the weighing mode.	Display returns to gross or net mode.

Viewing and Setting Time (OPTION)

*If you enter an incorrect digit, press the **ZERO/CLEAR** key to clear the display one digit at a time.*

1. From gross/net weighing mode, press **MENU** repeatedly until. . .	*Hour* is displayed.
2. Press **SELECT**. . .	In the 12 hour clock configuration you will see time displayed as hours, minutes and ***A*** for A.M. or ***P*** for P.M. ***(09.40 A)***. In the 24 hour clock, you will see hours, minutes and seconds ***(09.40.38)***.
3. To set the 12 hour clock, press the ↑ key to delete the old time value.	*0 A* or *0 P* is displayed. The ***A*** is for A.M., ***P*** for P.M.
Key in the time as **hh mm ss**. Refer to the section *Entering Numbers with Arrow Keys*. Press the **TARE** key to toggle between AM & PM after entering at least one digit and before pressing **SELECT**.	
4. To set the 24 hour clock, key in time as **hh mm ss**.	
5. After the clock is set, press **SELECT** to start the clock and return to operations mode menu,	*Hour* is displayed, and the clock begins at the new time setting.
or	
press **G/N** to return to gross/net weighing mode.	Display returns to gross/net mode and the clock begins at the new time setting.

Viewing and Setting the Date (OPTION)

*If you enter an incorrect digit, press the **ZERO/CLEAR** key to clear the display one digit at a time.*

1. From gross/net weighing mode, press **MENU** repeatedly until. . . *dAY* is displayed.
2. Press **SELECT**. . . Depending on the configuration of your indicator, you will see the date displayed in one of three ways:
   - month-day-year,
   - day-month-year, or
   - year-month-day.
3. To change the date, key in the new data. Refer to the section *Entering Numbers with Arrow Keys*. The old date is replaced with the new date.
4. Press **SELECT** to return to the operations mode menu, The date is accepted and *dAY* is displayed.

   or

   press **G/N** to return to gross/net weighing mode. The date is accepted and the display returns to gross/net mode.

Single Accumulator with Counter

There is a single channel accumulator in the indicator. The accumulator will add the displayed weights automatically and print individual weights and totals on command.

Weighing and Printing

Factory default configuration is Accumulator and Counter off.

*Printing the accumulated weight and count can be accomplished at any time during the weighing process; **however, printing these values automatically clears them from memory!** So take care to print the accumulated values only after you have made all the necessary weighments.*

A print/add function will occur if you have autoprint enabled or if a remote Print command is received by the indicator.

1. Weigh load. . . Indicator displays weight.
2. Press **PRINT**. . . Weight is printed.
3. For each additional load weighed, press **PRINT**. . . Each weight is printed individually and the weight is totalled automatically within the indicator.
4. After the last load has been weighed and printed, press **MENU**, then **TARE**. . . The total weight and count are printed and cleared from memory.

```
   G      210 lb
   G      200 lb
   G      200 lb
 Total    610 lb
 Count        3
```

Sample printout

Viewing Accumulated Weight and Count

GROSS *may be pressed at any time during viewing to return to weighing mode.*

1.	With weight displayed, press **MENU** until. . .	***ACC*** is displayed.
2.	Press **PRINT/SELECT**. . .	Total weight of all loads is displayed.
3.	Press **PRINT/SELECT** to toggle back to ***ACC***. . .	***ACC*** is displayed.
4.	Press **MENU** once. . .	***count*** is displayed.
5.	Press **PRINT/SELECT**. . .	Total number of loads is displayed.
6.	Press **PRINT/SELECT to** toggle back to count. . .	***count*** is redisplayed.
7.	Press **G/N** to return to weighing mode. . .	Current weight is displayed.

Enabling or Disabling Display Backlight

1.	From gross/net weighing mode, press **MENU** repeatedly until . . .	*Light* is displayed.
2.	Press **SELECT**.	*ENABLED* or *diSAbLEd* is displayed.
3.	Press **MENU** to toggle between enabled or disabled.	Configuration choices made during setup of this unit will determine if the backlight is on constantly or if it varies according to ambient light levels. Refer to the *Service Manual*.
4.	Press **SELECT** to return to the operations mode menu	The light selection is accepted and *Light* is displayed.
	or	
	press **G/N** to return to gross/net weighing mode.	The light selection is accepted and the display returns to gross/net mode.

Transmitting Data

RS-232 output is available for data transmission.

If your indicator has the serial option installed and the indicator is configured to allow printing from the gross/net weighing mode, press the **PRINT** key.

The **PRINT** annunciator (See Figure 2) will illuminate while data is transmitted to the printer. A default printout will list displayed weight only (see Figure 4).

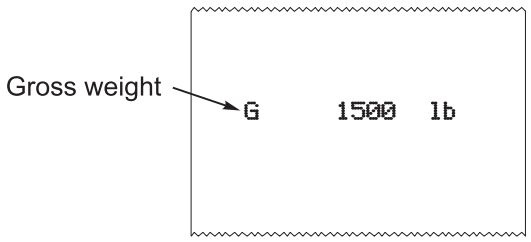


Figure 4
Sample WI-125 Default Printout

You can layout your printout for your specific need. Below is a sample of another printout. See the print layout instructions in the *Service Manual*.

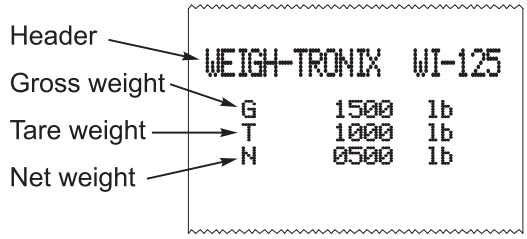


Figure 5
Possible Print Configuration

An enquire code can be sent to the WI-125. This will prompt the indicator to send a standard printout. The default enquire code number is an ASCII decimal 005. This number can be changed in configuration. See your Service Manual.

The default settings for serial output are:

Busy - Disabled
Baud - 1200
Parity - None
Stop bits - 1
Data bits - 8

The test mode is used to test various functions of the WI-125. The test menu is shown in Figure 6. Instructions for using the test menu are found below.

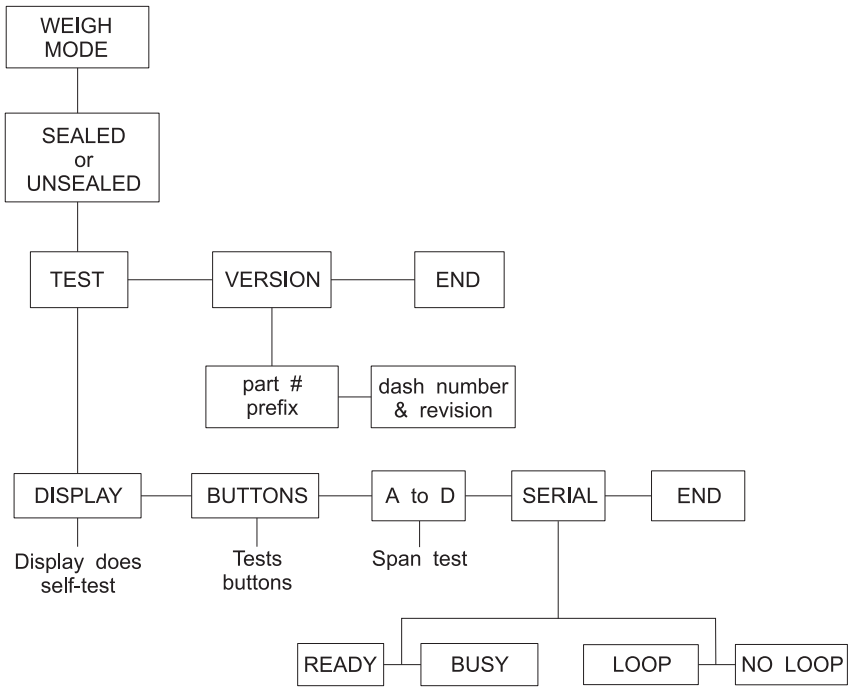


Figure 6
Test Menu

1. Enter the test mode from gross/net operation by pressing and holding the **MENU** key until *tESt* is displayed. *SEALEd* or *unSEALEd* is displayed briefly while you hold the key.
2. Move to the right through the menu selections by pressing **MENU** briefly. Move to the left through the menu selections by pressing **MENU** for 1 second or hold down for continuous scrolling.
3. To move down a level in the hierarchy, press **SELECT**. Anytime you wish to get to the next higher level in the hierarchy, press and hold **SELECT** for approximately 1.5 seconds or press **SELECT** whenever *End* is displayed.
4. Press **MENU** to toggle between choices.
5. Press **G/N** to return to gross weighing operation at any time.

Below are the specific directions and explanations for the items you see in the test menu.

VERSION — Under version are the Weigh-Tronix part number and revision number for the software found in your machine. Weigh-Tronix part numbers are divided into two parts: the prefix and the dash number.

DISPLAY — With *diSPLAY* displayed, press **SELECT** and the bottom row of annunciators turns on. Press **SELECT** again and a dynamic test is run. Press **MENU** to stop the dynamic test or consecutively press **MENU** to step through the display test routine. Press **SELECT** when the dynamic test is active to return the unit to *diSPLAY*.

BUTTONS — With *buttonS* displayed, press **SELECT** and an underscore will appear on the screen. Press any key except **MENU** to check for proper key functioning. After testing the buttons, press **MENU** to return to the display.

A to D — Displays the analog to digital counts. The span is normally 20,000 counts per millivolt per volt. With a calibrator at zero millivolts per volt, the displayed value should be between -200 and +200.

ANGLE — Displays pitch and roll confirming that the angle sensors are functional.

SERIAL — Tells you if the serial output is ready or busy. A jumper connecting pins 4 and 8 of the serial port will cause *rEAdY* to be displayed. Pressing the **MENU** key puts *LOOP* or *no LOOP* on the display. With pins 2 and 3 connected, *LOOP* is displayed. With them disconnected, *no LOOP* is displayed.

Calculating New Lift Capacity for the QTLTS

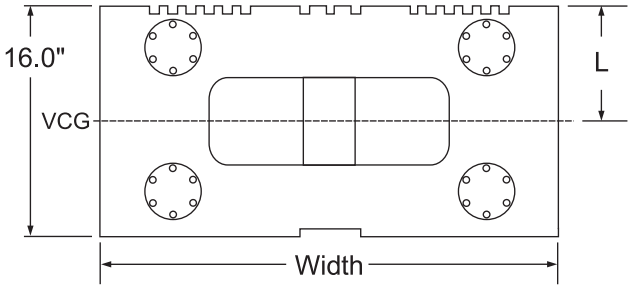
You must have the ID plate on the lift truck updated stating the new lifting capacity and center of gravity information. This requirement is per OSHA rules and regulations. A calculation formula is provided below. It is the customer's responsibility to contact their lift truck manufacturer / distributor with this information to obtain the new ID plate.

The QTLTS lift truck scale comes in ITA Class II (16" high, 5,000 lb) and ITA Class III (20" high, 5,000 and 10,000 lb) models. Each class comes in several widths for cleat type carriages. Measure the height and width of the lift truck carriage. Select from the table below the appropriate width that best meets the dimensions of the lift truck carriage. Use the weights, dimensions and the following formula to calculate the net lifting capacity of your lift truck with a scale attached. Refer to Figure 7.

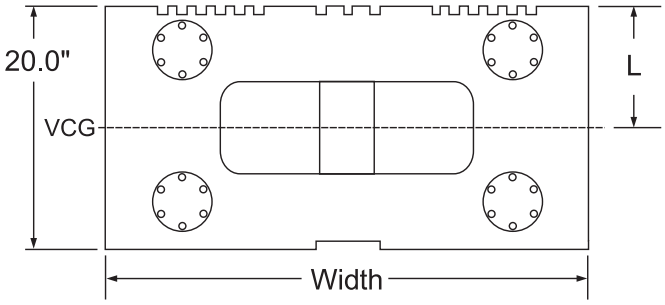
$$\text{Net Capacity} = \frac{A\,(B + C) - D\,(E + F)}{E + G + H}$$

A = Truck basic capacity, pounds
B = Inches from front wheel center line to fork face
C = Inches from fork face to truck rating point (usually 24")
D = Weight of the scale in pounds
E = Inches from front wheel center line to carriage face
F = Inches from carriage face to scale center of gravity (CG)
G = J + K (Inches from carriage face to rear face of load)
H = Inches from fork face to new truck rating point
J = Thickness of fork
K = Thickness of scale
L = ½ the height of the scale or the Vertical Center of Gravity (VCG)

Class II



Class III



Class II 5,000 lb Models

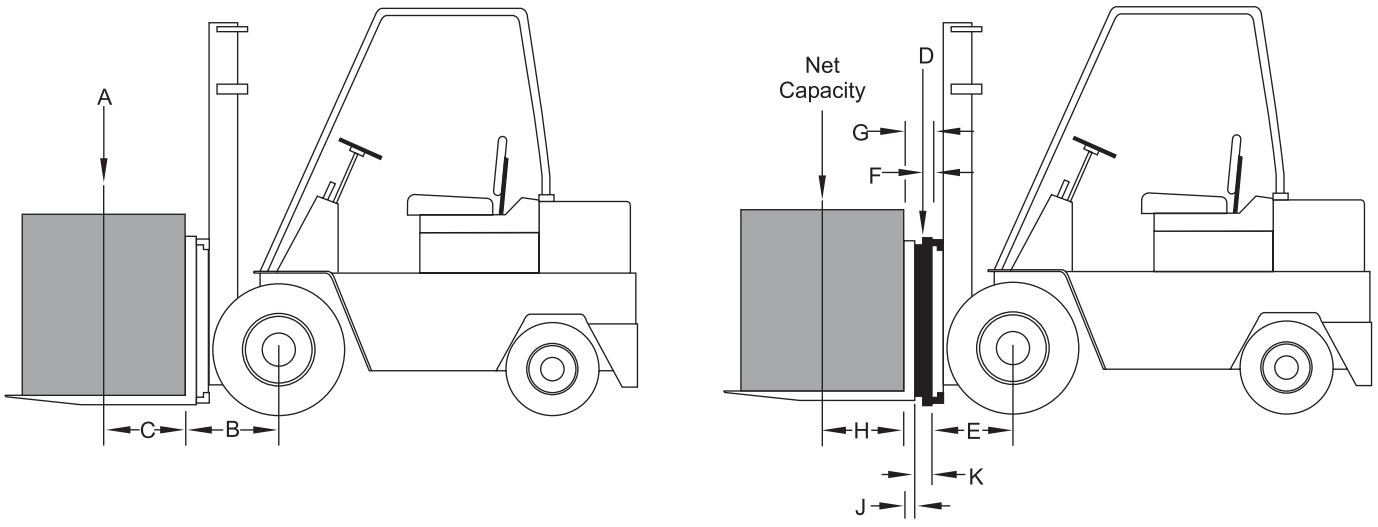
Scale P/N	Width	Weight "D"	DIM "F"	DIM "K
48196-0094	30.0"	373 lb	2.0"	4.0
48196-0011	32.0"	381 lb	2.0"	4.0
48196-0029	34.0"	389 lb	2.0"	4.0
48196-0102	36.0"	410 lb	2.0"	4.0
48196-0037	37.0"	413 lb	2.0"	4.0
48196-0110	38.0"	418 lb	2.0"	4.0
48196-0128	40.0"	438 lb	2.0"	4.0
48196-0045	42.0"	446 lb	2.0"	4.0

Class III 5,000 lb Models

Scale P/N	Width	Weight "D"	DIM "F"	DIM "K"
51856-0016	36.0"	520	2.00"	4.00"
51856-0024	37.0"	530	2.00"	4.00"
51856-0032	38.0"	540	2.00"	4.00"
51856-0057	40.0"	580	2.00"	4.00"
51856-0073	42.0"	635	2.00"	4.00"
51856-0099	44.0"	685	2.00"	4.00"
51856-0115	46.0"	700	2.00"	4.00"
51856-0131	48.0"	720	2.00"	4.00"

Class III 10,000 lb Models

Scale P/N	Width	Weight "D"	DIM "F"	DIM "K"
51857-0031	40.0"	725	2.75"	5.50"
51857-0056	42.0"	780	2.75"	5.50"
51857-0072	44.0"	795	2.75"	5.50"
51857-0106	47.0"	855	2.75"	5.50"
51857-0114	48.0"	865	2.75"	5.50"
51857-0155	52.0"	935	2.75"	5.50"
51857-0197	56.0"	1005	2.75"	5.50"
51857-0239	60.0"	1030	2.75"	5.50"



Lift truck with no scale

Lift truck with scale

Figure 7
Recalculating Lift Truck Capacity

Daily Inspection Checklist For Lift Truck Scale Users

- ❑ Check scale carriage for loose, worn, bent, or broken components.
- ❑ Inspect forks for damage.
- ❑ Check locking pins on forks for proper function.
- ❑ Inspect cables from the junction box to Weigh Bars for wear.
- ❑ Inspect retractable cable for pinched, rubbed, stretched, or damaged areas.
- ❑ Inspect power cable for nicks or cuts.
- ❑ Make sure power cable is routed out of harms way. Fasten periodically to eliminate potential problems.
- ❑ Tighten cable connections at indicator and summing box if necessary.
- ❑ Inspect cable clamps and cable ties to be sure all cable attachments are secure.
- ❑ Inspect digital indicator mounting bracket, isolation mounts and hardware for loose or cracked parts.
- ❑ Check to make sure the junction box cover/shield is fastened.
- ❑ Tighten bottom clamps on scale carriage if necessary. Raise carriage and visually inspect.
- ❑ Check and adjust the lift chain so the heel of the forks have ½" to 1" of clearance from the floor when the carriage is down and the mast is vertical.

WEIGH-TRONIX

Declaration of Conformance to SMA Standard
Year of Declaration 2002
Production Meets Type

® *

We the manufacturer of

Model	Type	Certificate and Number	Issued by
WI-125	Digital Electronic Indicator	NTEP CC 92-167A4	NCWM

Declare in our responsibility the conformance of the above listed models and types to the mentioned certificates and the requirements of the SMA standard.

This declaration becomes valid when the SMA Conformance Logo, having our name or trademark is applied to the device or its accompanying documentation.

* SMA PRODUCTION MEETS TYPE DEVICE MANUFACTURER Conformance Logo and Design are a registered trademark of the Scale Manufacturers Association

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